

**VERTICAL NANOTUBE SEMICONDUCTOR DEVICE STRUCTURES AND  
METHODS OF FORMING THE SAME**

**Abstract of the Disclosure**

5 Vertical device structures incorporating at least one nanotube and methods for fabricating such device structures by chemical vapor deposition. Each nanotube is grown by chemical vapor deposition catalyzed by a catalyst pad and encased in a coating of a dielectric material. Vertical field effect transistors may be fashioned by forming a gate electrode about the encased nanotubes such that the encased nanotubes extend vertically through the thickness of the gate electrode. Capacitors may be fashioned in which the encased nanotubes and the corresponding catalyst pad bearing the encased nanotubes forms one capacitor plate.